

PROPOSED CONTROLLED ACCESS HIGHWAY



ROUTE S-28

THROUGH NEW BRUNSWICK

a report to the

STATE HIGHWAY DEPARTMENT
NEW JERSEY
SPENCER MILLER JR.
COMMISSIONER

PREPARED BY • GILMORE D CLARKE • MICHAEL RAPUANO • LESLIE G HOLLERAN
CONSULTING ENGINEERS AND LANDSCAPE ARCHITECTS 145 E 32 ST N Y 16 NY

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THE EXISTING WATERFRONT - NEW BRUNSWICK

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PROPOSED CONTROLLED ACCESS HIGHWAY
ROUTE S28 THROUGH NEW BRUNSWICK

it was necessary first to study and to determine the most logical location for Route S-28 from a point in the vicinity of Mattewan extending to a connection with Route 29 in the vicinity of Somerville.

Both volume and origin and destination counts of motor vehicle traffic within the area were made available by the State Highway Department; these are graphically shown on Map No. 1. It should be noted that about 5,100 cars daily pass both through New Brunswick, and, generally over roads on the south side of the Raritan River, between New Brunswick and the industrial areas of Raritan, Somerville, Manville, and Bound Brook. In addition, about 2,900 cars daily, considered as temporary commuting traffic, pass from or through New Brunswick, thence over roads on the north side of the Raritan River, to the Bakelite Company's new plant on the outskirts of Bound Brook; this traffic movement is largely the result of the recent move of this plant from Perth Amboy.

weigh not clear
1940 counts

We made extensive field studies of several possible routes connecting the two points referred to above before arriving at our conclusion. Map No. 2 indicates these routes. It will be noted that some of these studies considered routes which would by-pass the City of New Brunswick; other studies considered the location of routes passing through the northerly part of the City following generally along the shores of the Raritan River.

RECOMMENDATIONS:

As a result of a study of the volume and origin and destination counts, of motor vehicles moving within the area centering

upon the City of New Brunswick, your Consultants came to these conclusions: 1, that this should be a controlled access highway; 2, that the location which would best serve the State and the political subdivisions of the State within the area tributary to the proposed new route, including the City of New Brunswick, would be one passing north of South River and Old Bridge crossing Route 28 and passing southwest of the existing intersection of Routes 28 and 25, thence through the eastern portion of the City of New Brunswick, generally along the Raritan River, continuing in a northwesterly direction along the Delaware and Raritan Canal to a point about 2 miles north of Landing Road, thence across open country east of Manville to a crossing of Route 28, joining Route 29 east of Somerville, ~~(Map No. 3)~~. *unsubstantiated*

Alternate Routes A and B

Within the City of New Brunswick we made studies of two alternate schemes of a section of proposed Route S 28 ~~which we have shown on maps at a scale of 200 feet equal 1 inch.~~ These two alternate routes, Scheme A ~~(Map No. 4)~~ and Scheme B ~~(Map No. 5)~~, are similar from Route 25 to a point opposite Clifton Avenue on the southeast. and from the Pennsylvania Railroad to Landing Road on the northwest. Between Clifton Avenue and the Pennsylvania Railroad Scheme B ~~(Map No. 5)~~ follows closely parallel to Burnett Street and along or immediately northeast of it. Scheme A ~~(Map No. 4)~~ between these same two points, follows generally along the bed of the Delaware and Raritan Canal.

It is our considered judgment, following five months study of this problem, that the interests of the State may best be served by constructing the 1.6 mile section of the proposed controlled access highway (Route S-28) between a point approximately 2600 feet southeast of Clifton Avenue to the Pennsylvania Railroad Bridge, as shown by Scheme A ~~on Map No. 4~~. This route through the City will provide a most scenic drive along the south bank of the Raritan River, will serve to remove a large volume of through east-west vehicular traffic from the streets of the City of New Brunswick, and will afford convenient and attractive approaches to the City from points east and west. *how much*

In accordance with our agreement, the estimate of cost and the more detailed description of this section of Route S-28 attached hereto (Exhibit A), refer only to that portion of the project within the limits above referred to. The estimated cost for land and construction within these limits and as shown on Scheme A is \$5,117,800.00.

The right-of-way necessary for the construction of Route S-28 is of sufficient width so that the borders of the roadways may be embellished appropriately with plantations of trees, with ground cover material for slopes, and with grassed areas on the more or less flat sections of the right-of-way. ✓

This location of proposed Route S-28 will afford the City of New Brunswick an opportunity to provide a spacious river park area from Clifton Avenue to Albany Street easy of pedestrian ✓

access from Burnet Street and the residential areas bordering and to the west of it. The acquisition of the lands remaining between the highway and Burnet Street will provide a much needed recreational area, the development of which would very materially enhance the value of lands lying to the west of Burnet Street which are now occupied, in a large part, by obsolescent residential structures. While, due to the housing shortage and the relatively high cost of building materials, it doubtless would be unwise to engage in a large scale program of building demolition at this time, it would appear, nevertheless, that the improvement of the area east of Burnet Street would in time lead to the rehabilitation of the areas to the west by the construction of modern housing and thus lead to the reclamation of a blighted section of the City. ✓

Exhibit A together with maps, plans and drawings describes Scheme A, which we recommend. We have also included a map and certain drawings descriptive of Scheme B.

Exhibit B discusses the availability of the Delaware and Raritan Canal as right-of-way for Route S-28.

We were assisted by several members of your Department, by officials of other agencies of the State and of the City of New Brunswick, all of whom rendered every possible assistance in providing us with plans, data, and with the benefit of their long experience in solving similar problems in the State of New Jersey.

We also wish to express our appreciation to you for your helpful cooperation and encouragement throughout this study.

Respectfully submitted,

GILMORE D. CLARKE

MICHAEL RAPUANO

LESLIE G. HOLLERAN

E X H I B I T A

ROUTE S-28

DESCRIPTION OF SCHEME "A"

IN THE CITY OF NEW BRUNSWICK

Scheme "A" presupposes a controlled access highway. The south shore of the Raritan River, generally over the Delaware and Raritan Canal, is the location upon which this description is based.

At a point approximately 2,600 feet east of Clinton Avenue, S-28 would pass under Route 28 and along the south shore of the Raritan River. West of Clifton Avenue, it would swing north-erly over the Delaware and Raritan Canal. Near Commercial Avenue a traffic interchange is contemplated to connect the highway with the City via Commercial Avenue. The route would continue along the River, with an interchange at the approach span of the contemplated upper level of the Albany Street Bridge. From here the highway would follow the line of the Canal.

The estimate previously given is based upon the following assumptions:-

Land Acquisition and Demolition

That for Scheme "A" the acquisition of a comparatively small amount of land now in private ownership, and the demolition of but few existing buildings would be required for the construction of the controlled access highway (Map No. 4);

Availability of Delaware and Raritan Canal
as Right-of-Way for Route S-28

That the Delaware and Raritan Canal can be made available as the right-of-way for Route S-28;

(This is discussed in our report of October 28, 1947, a copy of which was transmitted to State Highway Engineer Charles M. Noble under date of October 30, 1947; a copy is attached hereto (Exhibit B). On December 10, 1947 this matter was discussed at a conference with the State Conservation Commission, at which representatives of the State Highway Department and representatives of this firm were present. Following this conference, it was understood that we would complete our plans and estimates for Scheme "A" on the basis of filling in the canal as a right-of-way for the highway.)

Grades and Alignment

That a maximum gradient of 3-1/2% is desirable, with a minimum of 1/2% for the greater part of the section under study;

That the minimum horizontal radius on the highway be held to 1,600 feet, and that access roads have the longest radii consistent with the requirements of the interchange;

That highway and access roads have vertical curves which will permit horizontal sight distances of at

least 475 feet, in accordance with standard practice of the New Jersey State Highway Department;

That the superelevation of the highway and the horizontal and vertical clearances meet the same standards;

Pavement and Curb

That the normal highway cross-section consist of two driveways each 24 feet wide separated by a grassed median strip, variable in width, with 10-foot shoulders on the outside of each driveway; that the width of the median strip may vary with a minimum of about 34 feet in the vicinity of bridges and more than 50 feet in the vicinity of Commercial Avenue; that a permanent pavement type and curbs be provided.

Drainage

That the design of the drainage system be governed by the New Jersey State Highway Department specifications and practice; that advantage be taken of the proximity of the highway to the Raritan River by extending lateral connections from the inlets directly to the River wherever economy dictates this arrangement;

Unclassified Excavation and Imported Fill

That this item include excavating all earth and

rock, moving this material to a place of use or disposal, placing, compacting and grading it; that a relatively large quantity of material, not available from areas of excavation, would be needed to fill the canal and construct embankments for the highway and access roads.

STRUCTURES

Structure No. 1

Underpass of Existing Route 28 Approximately
2,600 feet southeast of Clifton Avenue.

A skewed, double-span, rigid-frame bridge of reinforced concrete construction is contemplated. The overall width of such a structure would be approximately 80 feet.

Structure No. 2

Upper Deck on Albany Street Bridge, Accesses
thereto, and Reconstruction of Accesses
to Lower Level.

Because of the location and elevation being considered for the controlled access highway S-28 in Scheme "A" at the west end of the Albany Street Bridge, an upper deck on this existing structure would be required to maintain Albany Street traffic. Our studies indicate that the existing piers, abutments, and footings of the Albany Street Bridge are adequate to support loads imposed by adding a deck. An upper deck could be carried by continuous plate girders of variable depth supported by columns resting on the existing masonry piers and abutments.

Ramps supported by earth fill between retaining walls

can be used to meet the upper level approach structures. On the east side of the river, access to the lower level can be provided by roadways on each side of the upper level ramp.

This development presupposes the demolition of the existing approach spans on the New Brunswick side of the River.

With this new facility traffic between Highland Park and Albany Street would use the upper level. Traffic from Highland Park to the northbound roadway of S-28 would use the lower level, as would traffic destined to Highland Park from the northbound roadway of S-28

Structure No. 3

Traffic Interchange at Commercial Avenue

The contemplated interchange at Commercial Avenue would provide a direct exit for north and southbound traffic. North and southbound traffic also may enter from Commercial Avenue; southbound directly, and northbound after weaving with the southbound traffic for approximately 300 feet. One relatively narrow reinforced concrete rigid-frame bridge would serve this interchange. Several alternates were studied; the one shown for Scheme "A" (Map No. 4) seems to us best to fulfill the requirements from the point of view of traffic flow and of economy of construction.

Structures - General

Consideration has been given to alternate methods of treating the Bridges. The design upon which the estimate was based contemplated appropriately treated concrete for the

exposed surfaces of all wingwalls. In proximity to park and re-development areas it may be desirable to estimate the additional cost of stone masonry veneers.

Maintaining Traffic

Estimates of cost include provisions for maintaining traffic while construction is in progress. Special consideration has been given to maintaining traffic along Route 28, and over the Albany Street Bridge.

Lighting

Lighting the highway and its accesses, the upper deck of the Albany Street Bridge, and accesses thereto, includes the items of light standards, conduits, wiring, and all incidental material and labor.

Design

The design and preparation of plans for the driveways, structures, walls, utilities, and all related facilities, are in accordance with the specifications and practice of the New Jersey State Highway Department and the American Association of State Highway Officials.

E X H I B I T B

October 28, 1947

NEW BRUNSWICK
EAST-WEST ROUTE

Availability of Delaware and Raritan Canal
As Right-of-Way for Route S-28

As the question of filling the Canal for use as a road bed for this highway may assume considerable importance, an investigation of the status of the Canal has been made.

Chapter 172 P.L. 1944 is entitled:

"An Act to provide for the use of the Delaware and Raritan Canal and to provide an appropriation therefor, and to supplement chapter thirteen of Title 13 of the Revised Statutes."

This Act provides in part as follows:

"The Delaware and Raritan Canal and the feeder thereof and the appendages thereto and the works and improvements erected thereon, except the properties and facilities referred to in the provision of section five of chapter one hundred thirty-nine of the laws of one thousand nine hundred and thirty-four and except the existing vehicle bridges over the same, shall henceforth be used as a source of industrial water supply and for recreational purposes, all as herein-after more fully set forth.

"The Department of Conservation and Development shall continue to retain possession of said canal and shall hold the same for the purposes of this act.

"Until otherwise directed by the Legislature, the Department of Conservation and Development shall repair, rehabilitate, reconstruct, maintain and improve the said canal in such manner as shall preserve said canal in safe and proper condition for operation of the same for the purposes of this act and as shall maintain such necessary flow through said canal in order that safety and sanitary conditions in and adjoining said canal shall be in a safe and wholesome

condition and as shall assure and maintain such flow of water through said canal as may from time to time be appropriate in order that the maintenance and operation of said canal as a source of industrial water supply may be efficiently provided for.

"The Department of Conservation and Development shall be empowered to sell, for industrial purposes, water from said canal, on just and reasonable terms and conditions and at just and reasonable prices, and shall be empowered to enter into long term contracts, but not exceeding twenty-five years, for sale of such water, for industrial purposes, whenever it deems the same will reasonably promote industrial development in any section or sections of the State through which said canal flows and will properly conserve the public interest.

"The Department of Conservation and Development shall, in addition, improve such portion of said canal and its appurtenances as it may deem proper to develop for recreational and park uses, provided, said uses shall not unreasonably interfere with the efficient operation of said canal as a source of industrial water supply."

It appears that the water in the canal comes from purer sources than the water in the Raritan River, and that the water can be delivered at a higher elevation than can the water from the river which makes the canal a very desirable source of supply for industrial purposes.

It will be noted from the above abstracts that there is no limitation except the capacity of the canal to the quantity of water which can be sold for industrial uses.

It is also to be noted that while the Department of Conservation is empowered to develop the canal for recreational and park purposes, there is no authority to develop it for highway purposes.

The possibility of using the canal for highway purposes was apparently considered when the act was drawn up as an article in the Magazine "New Jersey Municipalities" for October 1947 by Mr. Howard T. Critchlow, Chief Engineer, Division of Water Policy and Supply, New Jersey Department of Conservation states as follows:

"The possibility of using the canal property for highways or parkways, either exclusively or in combination with other uses, was considered. However, the State Highway Engineer felt that in general the narrowness and roundabout route of the canal right-of-way would render it of no material benefit to the Highway Department."

Before any plan which proposes to fill in the canal as a road bed for the highway can be considered as definitely feasible, some understanding will have to be reached with the Department of Conservation by the State Highway Department, and it would appear that the Act would have to be amended so as to authorize the use of the canal for highway purposes.

If a section of the canal were to be used for the highway, it still would be necessary to supply water for industrial uses along the part so used by means of a pipe, conduit or flume. In order to deliver water at New Brunswick at the required elevation, the top of the pipe or conduit would, we believe, be above the economical grade of the roadway. This probably would require the construction of a conduit, pipe or flume along and outside of the westerly side of the highway.

We have discussed with Mr. Critchlow the quantity of water for which such a conduit should be designed. He informs

us that the canal is being designed to deliver 75,000,000 gallons of water per day at Bound Brook, and that his department had planned on about 50% of that quantity being available at New Brunswick which would be used as follows:

4 million gallons per day now being used by
Johnson and Johnson;
10 million gallons per day for East Brunswick and
Franklin Township now under negotiation;
11 to 23 million gallons per day for future industrial requirements.

We are informed that the surface of the pool of water at Johnson and Johnson plant must be maintained at about elevation 17. Subject to checking when more accurate information is available as to grades, we believe that a pipe or flume would be necessary in order to provide various quantities of water at New Brunswick as follows:

<u>Discharge - Gals.</u> <u>Per day</u>	<u>Diameter Circular</u> <u>Pipe</u>	<u>Diameter Semi-</u> <u>Circular Flume</u>
25,000,000 Z	72"	96"
37,500,000 Z	84"	108"
75,000,000 Z	108"	144"

These sizes are based upon uniform use over the 24 hour period. If peak loads must be provided for, the sizes would be correspondingly larger.

Mr. Critchlow stated that he thought it might be feasible to fill in the canal for a roadbed but before we get much further with any plans which contemplate filling the canal and using it for a highway, we should discuss the matter with the State Highway Department so that they can, if necessary, take the matter up with the Department of Conservation and determine formally whether the Department will consent to the use of the canal for

highway purposes and if so, the quantity of water which must be provided at various points along the canal.

Our discussions with Mr. Critchlow have been very informal.

CLARKE, RAPUANO AND HOLLERAN

Leslie G. Holleran







MAP TO ACCOMPANY A REPORT
TO
STATE HIGHWAY DEPARTMENT
NEW JERSEY

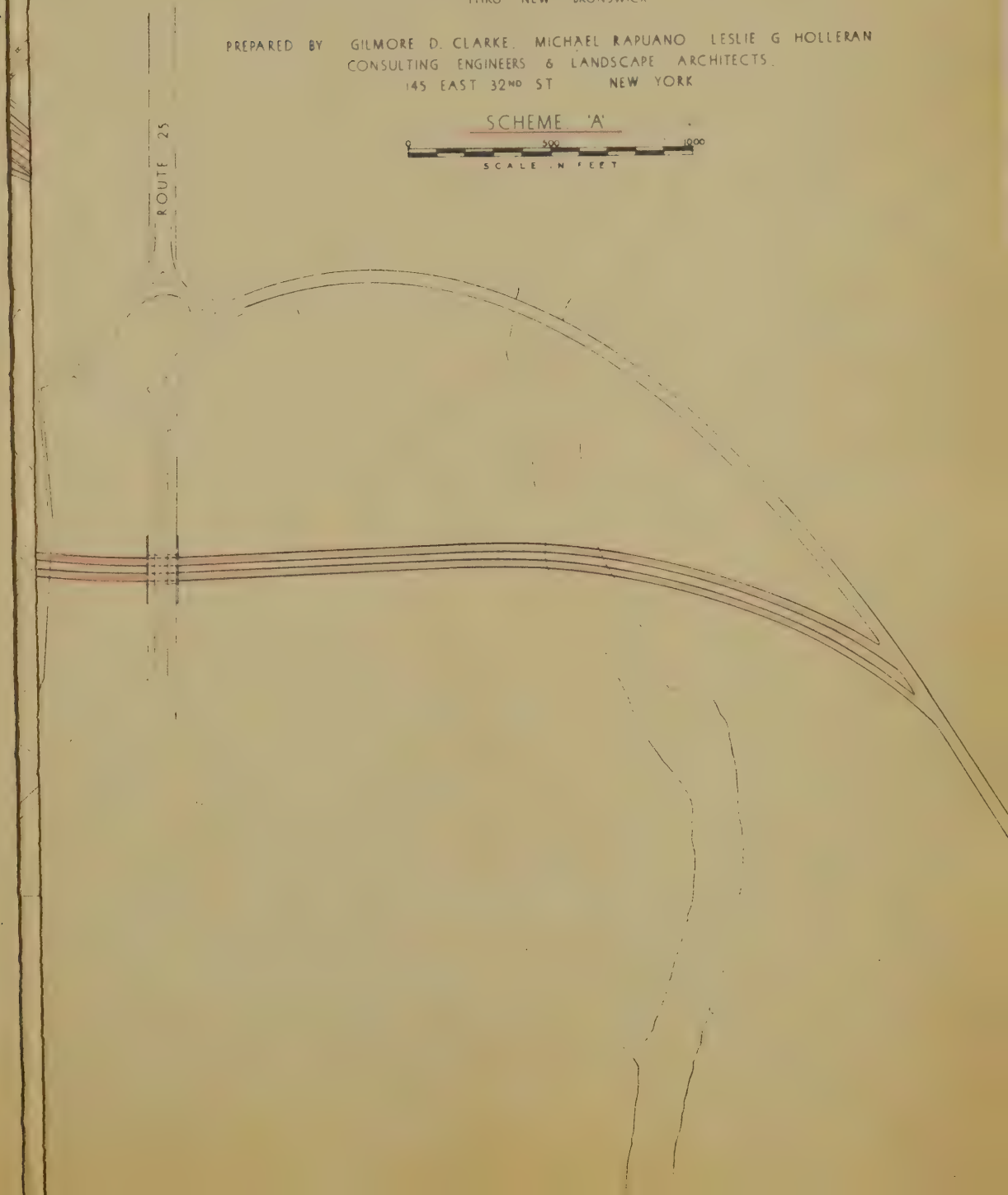
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SPENCER MILLER JR. COMMISSIONER

SHOWING STUDIES FOR THE LOCATION OF ROUTE 5-28
THRU NEW BRUNSWICK

PREPARED BY GILMORE D. CLARKE, MICHAEL RAPUANO, LESLIE G. HOLLERAN
CONSULTING ENGINEERS & LANDSCAPE ARCHITECTS.
145 EAST 32ND ST. NEW YORK

SCHEME 'A'





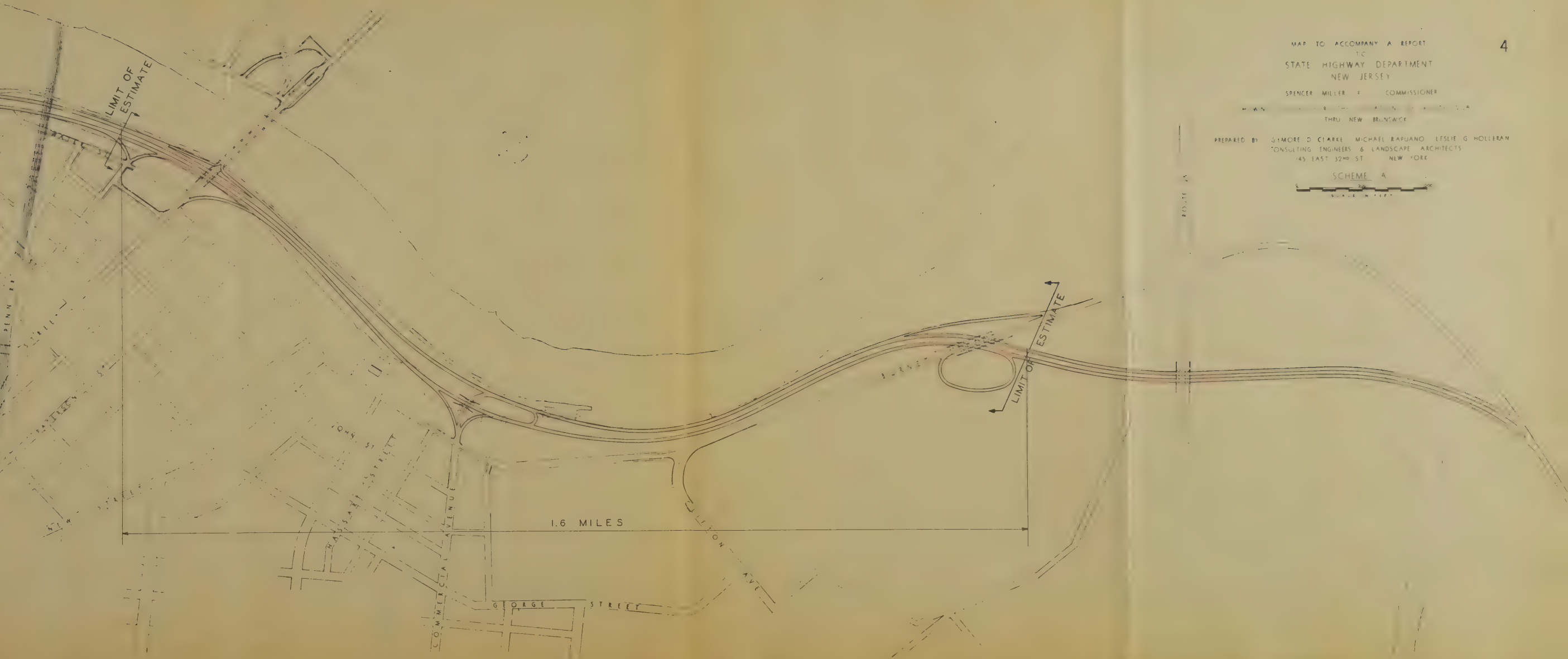
MAP TO ACCOMPANY A REPORT
TO
STATE HIGHWAY DEPARTMENT
NEW JERSEY

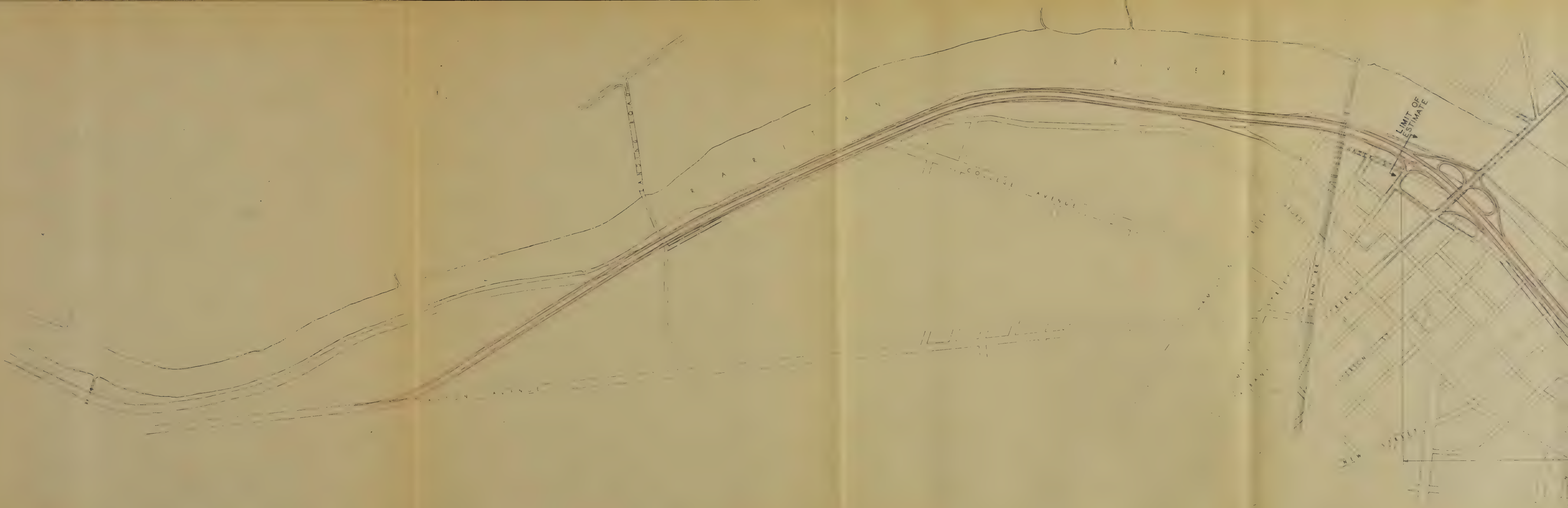
SPENCER MILLER, JR. COMMISSIONER

H. W. N. ...
THRU NEW BRUNSWICK

PREPARED BY SIMORE D. CLARKE MICHAEL RAPUANO LESLIE G. HOLLERAN
CONSULTING ENGINEERS & LANDSCAPE ARCHITECTS
145 EAST 32ND ST. NEW YORK

SCHEME A
SCALE IN FEET







MAP TO ACCOMPANY A REPORT
TO
STATE HIGHWAY DEPARTMENT
NEW JERSEY

SPENCER MILLER JR. COMMISSIONER
SHOWING STUDIES FOR THE LOCATION OF ROUTE 5-28
THRU NEW BRUNSWICK

PREPARED BY GILMORE D. CLARKE MICHAEL KAPUANO LESLIE G. HOLLERAN
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SCHEME 8
SCALE IN FEET

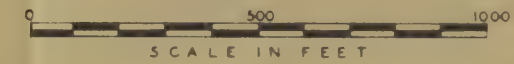
MAP TO ACCOMPANY A REPORT
TO
STATE HIGHWAY DEPARTMENT
NEW JERSEY

SPENCER MILLER JR. COMMISSIONER

SHOWING LAND REQUIRED FOR SCHEME 'A' - ROUTE S-28
THRU NEW BRUNSWICK

PREPARED BY GILMORE D. CLARKE, MICHAEL RAPUANO, LESLIE G. HOLLERAN
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SCHEME 'A'

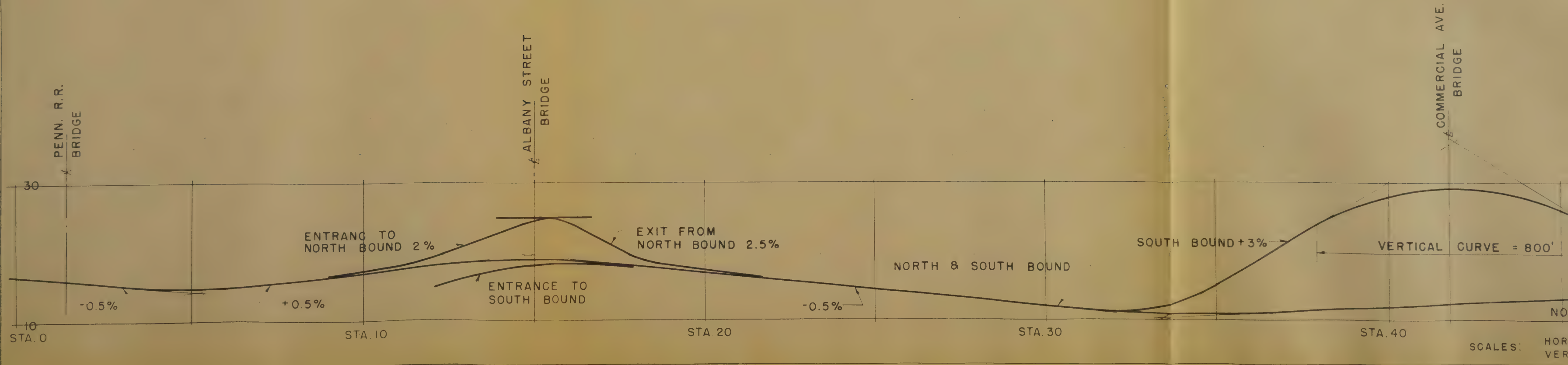
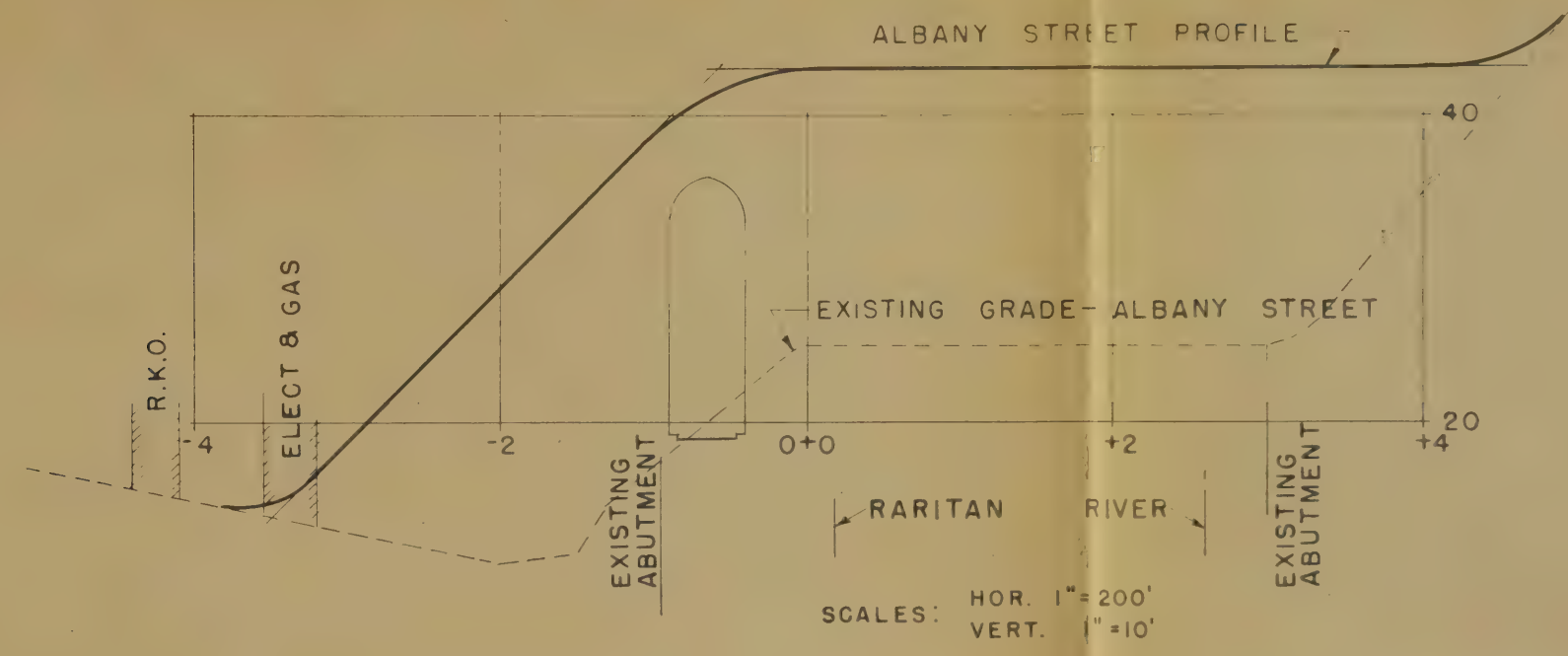


LEGEND

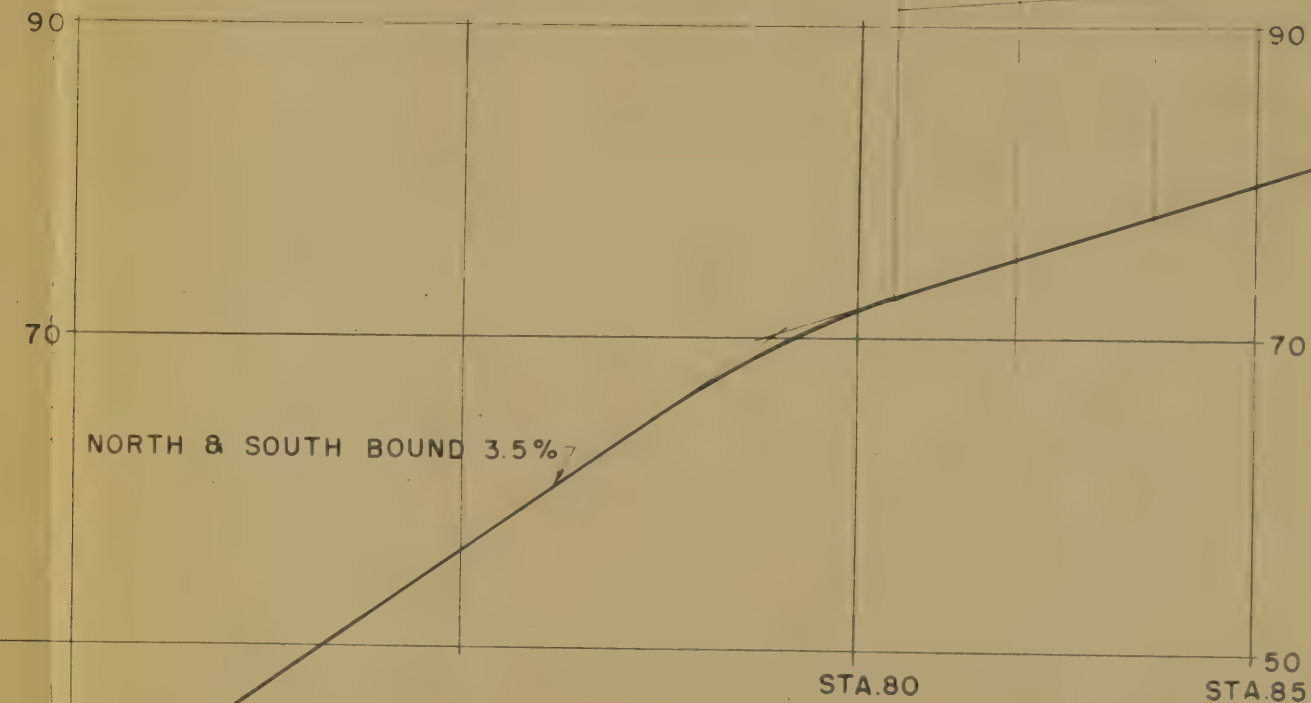
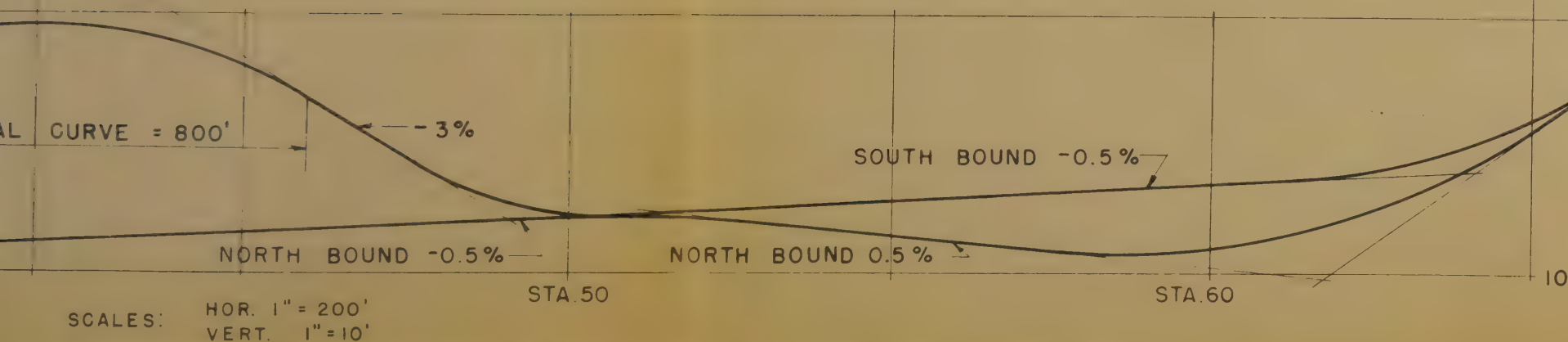
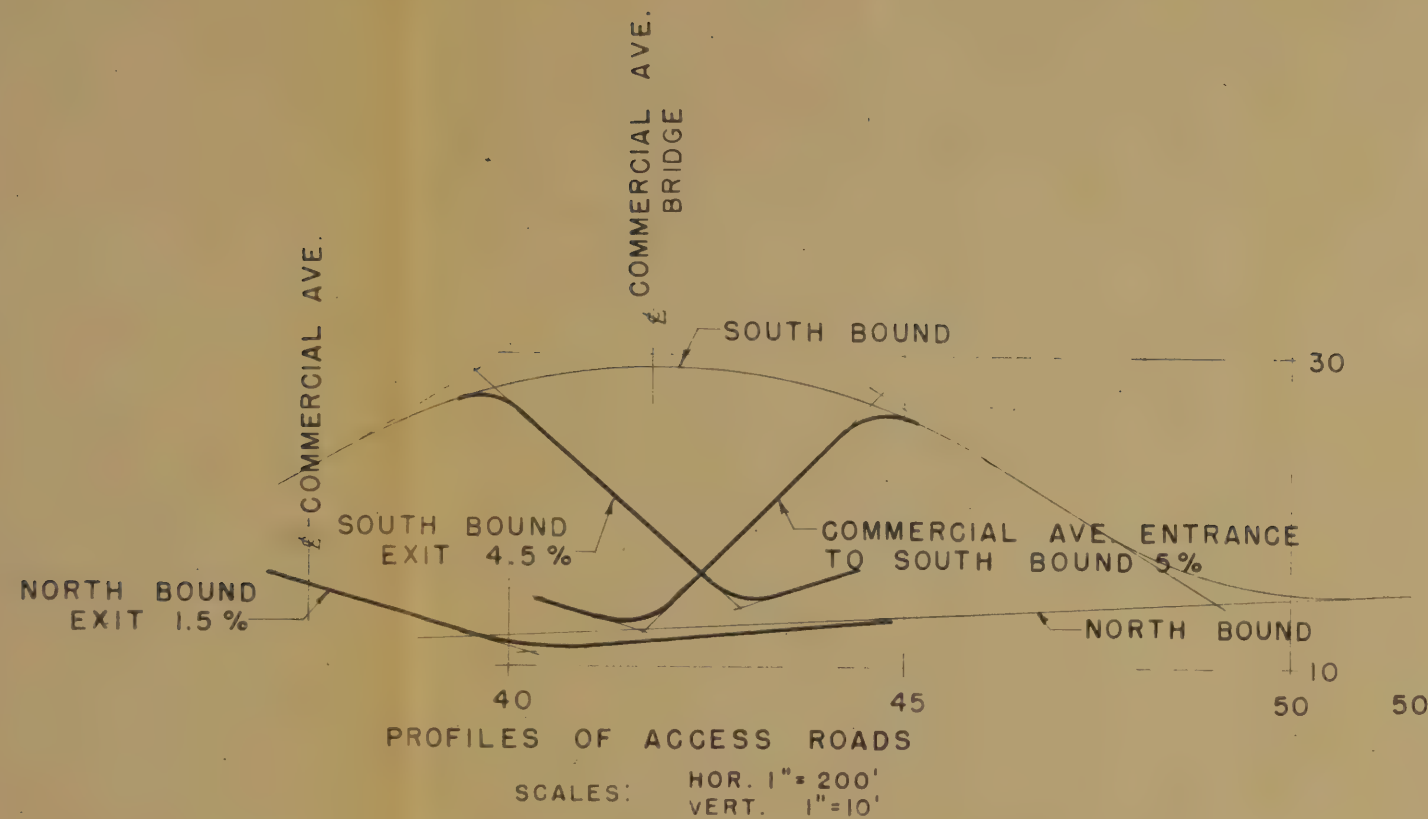
- PUBLIC PROPERTY
- PROPERTY TO BE ACQUIRED
- DELAWARE & RARITAN CANAL



T Y P I C A L S E C T I O N



COMMERCIAL AVE.
BRIDGE



STATE HIGHWAY DEPARTMENT
NEW JERSEY

SPENCER MILLER JR. COMMISSIONER

PROFILES FOR SCHEME 'A' - ROUTE S-28
THRU NEW BRUNSWICK

PREPARED BY: GILMORE D. CLARKE, MICHAEL RAPUANO, LESLIE G. HOLLERAN
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BURNETT ST.
BRIDGE



SCENE 4A
GRADE SEPARATING THE ALBANY
AND FLEETWICK RIVERS

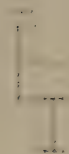


PLAN FOR TREATMENT OF BRIDGE - STREET LAYER BRIDGE.

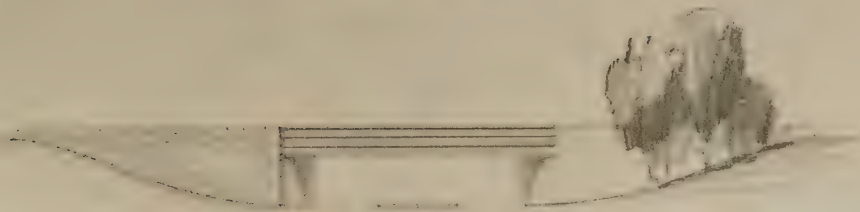
PLAN OF BRIDGE.

SEE EXHIBIT, B. 1.

SCHEME A



BRIDGE AT DISTRICT COMMERCIAL



BRIDGE AT DISTRICT COMMERCIAL

1. Bridge at District

RIVER ELEVATIONS

BRIDGE AT DISTRICT COMMERCIAL

BRIDGE AT DISTRICT COMMERCIAL

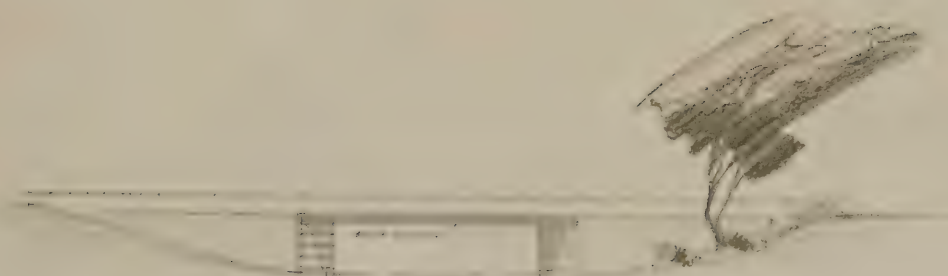
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SECTION 1/4" = 1'-0"

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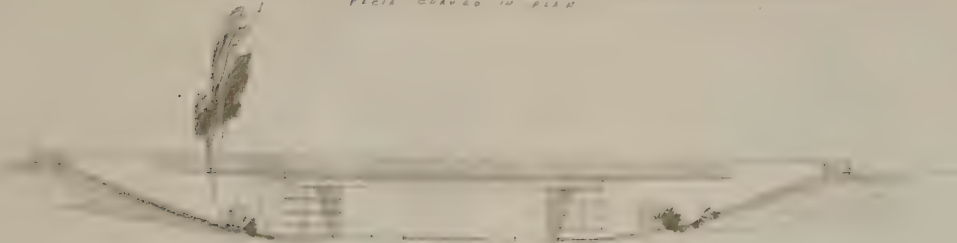
SECTION 1/4" = 1'-0"

SECTION 1/4" = 1'-0"



11.200'

STUDY IN STEEL & CONCRETE - MAX. CEILING LEVEL - 42'-0" -
PLAN CHANGED IN PLAN



11.200'

STUDY FOR ALL CONCRETE - GENERAL CONSTRUCTION

SIX ELEVATIONS

SCALE 1" = 20'

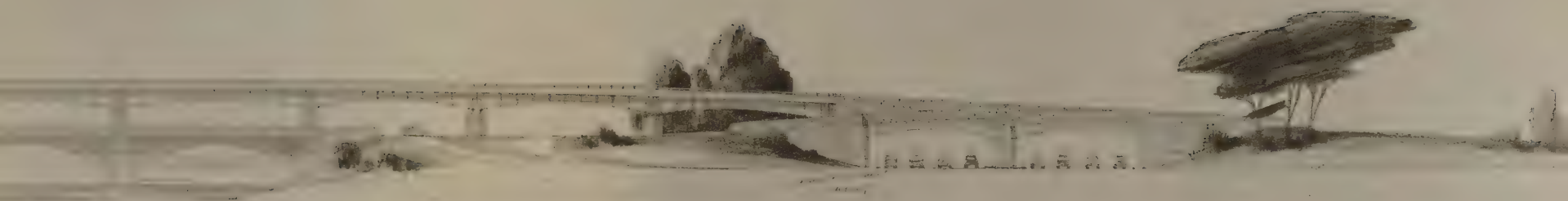
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NEW BRUNSWICK, N.J.



SCHEME B

THE GRADE SEPARATION AT ALBANY STREET
NEW BRUNSWICK, NEW JERSEY

CHARLES RAPUANO & HOLLEMAN
ART. & 32nd ST. N.Y.C.





VIEW FOR TRIBUTARY OF ELLEN STREET BRIDGE

HOUSING LITIGATION

NEW BRIDGE FOR THE JURY

SCHEME B

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